

LDWSF
12.3.55-1

TABLE IV-9. CONCENTRATIONS (PPM) OF POLLUTANTS FOUND IN FRESHWATER SEDIMENT

Pollutant	Threshold "Value"*	Sediment Concentration	
		Median	95th Percentile
<u>Metals</u>			
Copper	136	4.0	32
Lead	132	16	199
Mercury	0.8	< 1.0	1.0
Zinc	760	41	379
Nickel	20	13	99
Arsenic	33	4.0	39
Cadmium	31	1.0	12
<u>Polynuclear Aromatic Hydrocarbons</u>			
Acenaphthalene	24	0.6	4.3
Anthracene	44	0.5	4.5
Benzo(a)anthracene	220	0.01	0.014
Fluorene	28	0.6	4.5
Phenanthrene	56	0.6	5.6
<u>Phthalate Esters</u>			
Diethylphthalate	1.28	0.4	5.62
Dimethylphthalate	1.96	0.5	4.47
<u>Pesticides</u>			
Aldrin	0.021	0.0001	0.03
Chlordane	0.020	0.001	0.097
DDT	0.006	0.0004	0.015
Heptachlor	0.020	----	0.006
Lindane	0.0124	0.0006	0.012
Toxaphene	0.020	----	0.044

*Threshold values are primarily based on sediment-water equilibrium. Please see Section III-E for further details.

Source: From Bolton et al. (1985)

21-MAY-87
15:25:05

EPA Region X Lab Management System
Sample/Project Analysis Results

Page 1

Project: TEC-222D

MARINE POWER

Officer: MJM

Account: AFEB3A

Sample No: 87 150001 Begin Sample Date: 87/04/09 13:17 Source:

Laboratory: RX

Description: LAKE UNION SED W SIDE MPE DD3

Particle Size Analys		Sediment	
Parameter		Result	Units
<8.0 >=4.0mm		NAR	%
<4.0 >=2.0mm		4.0746	%
<2.0 >=1.0mm		24.7618	%
<1.0 >=0.5mm		23.2130	%
<0.5 >=0.25mm		18.0628	%
<0.25 >=0.125mm		10.6093	%
<0.125 >=0.062mm		6.4268	%
Silt and Clay <0.062mm		12.8518	%
<0.062 >=0.031mm		4.4349	%
<0.031 >=0.016mm		5.3989	%
<0.016 >=0.008mm		1.0144	%
<0.008 >=0.004mm		0.8635	%
<0.004 >=0.002mm		0.2515	%
<0.002 >=0.001mm		REQ	
Residual <0.002mm		0.8886	%
Gravel >=2.0mm		4.0746	%
Sand <2.0 >=0.062mm		83.0737	%
Silt <0.062 >=0.004mm		10.8482	%
Clay <0.004mm		2.0036	%
Water Content		40.46	%

Metals - Specified		Sediment	
Parameter		Result	Units
Arsenic	As-Sedmt	2760	mg/kg-dr
Cadmium	Cd-Sedmt	7.9	mg/kg-dr
Chromium	Cr-Sedmt	120	mg/kg-dr
Copper	Cu-Sedmt	3360	mg/kg-dr
Lead	Pb-Sedmt	2790	mg/kg-dr
Zinc	Zn-Sedmt	8940	mg/kg-dr
Tin	Sn-Sedmt	63.5	mg/kg-dr
Iron	Fe-Sedmt	143350	mg/kg-dr
Mercury	Hg-Sedmt	0.21	mg/kg-wt

(Sample Complete)

TABLE 3.1. FRESHWATER DATA SUMMARY--METALS

	Threshold Concentration (mg/kg)	Total Number of Locations	Percent in Level 1	Percent in Level 2	Percent in Level 3	Percent in Level 4	Median Concentration (mg/kg)	95th Percentile Concentration (mg/kg)	Maximum Concentration (mg/kg)
u Cu	136	300	99.9	none	0.1	none	4.0	32	493
b Pb	132	32,024	92.5	5.0	1.5	1.0	16	199	19,000
g* Hg	0.8	24,989	92	4.0	2.0	2.0	< 1.0	1.0	40,000
n Zn	760	23,382	96	1.5	1.5	1.0	41	379	50,800
i Ni	20	15,690	57	32	7.0	3.0	13	99	6,000
s As	33	16,275	94	3.5	2.4	0.1	4.0	39	6,200
d Cd	31	20,297	97.5	1.0	1.0	0.5	1.0	12	8,230

The mercury and values were not corrected for organic carbon content.

ROUTING AND TRANSMITTAL SLIP

Date

5-8-87

TO: (Name, office symbol, room number, building, Agency/Post)

Initials

Date

1.

Mike Matta (ES-098)

2.

3.

4.

5.

Action	File	Note and Return
Approval	For Clearance	Per Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
Comment	Investigate	Signature
<input checked="" type="checkbox"/> Coordination	Justify	

REMARKS

Attached are data results received under Project Code TEC-222 D.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)

Room No.—Bldg.

Arthur D. Baker # QA.MD.; ESD.;
EPA Region 10; Seattle, WA.

Phone No.

-1692

5041-102

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

LIST OF RESULT QUALIFIERS FOR NON NUMERIC RESULTS

A result qualifier indicates the reason the analysis did not produce a numerical result.

Qualifier	Full name	Definition
FPS	Failed Preliminary Screening	A preliminary screening of the sample for the subject parameter was conducted.
MSQ	Not Sufficient Quantity	There was not a sufficient quantity of the sample to conduct an analysis to determine the concentration of the subject parameter.
LAC	Laboratory Accident	There was an accident in the laboratory that either destroyed the sample or rendered it not suitable for analysis.
FAC	Field Accident	There was an accident in the field that either destroyed the sample or rendered it not suitable for analysis.
ISP	Improper Sample Preservation	Due to improper preservation of the sample it was rendered not suitable for analysis.
NAI	Not Analyzed Due to Interference	Because of uncontrolled interference the analysis for the subject parameter was not conducted.
NAR	No Analysis Result	There is no analysis result. Reason is unspecified.
PNO	Present But Not Quantified	The subject parameter was present in the sample but no quantifiable result could be determined.
CAN	Cancelled	The analysis of this parameter was cancelled and not performed.
FOC	Failed Quality Control	The analysis result is unusable because quality control limits were exceeded when the analysis was conducted.
BDL	Below Detectable Limits	There was not a sufficient concentration of the parameter in the sample to exceed the lower detection limit in force at the time the analysis was performed.
E	Exponent	Used to report results with large values. The value is equal to the number before E times 10 to the power of the number after E.
UND	Undetected	Indicates material was analyzed for but not detected.

List of Remark Codes

B	Analyte is found in the blank as well as the sample, indicates possible/probable blank contamination.
J	Estimated value; value not accurate.
M	Presence of material verified but not quantified.
U	Compound was analyzed for but not detected. The number is the minimum detection limit.
U.I	Compound was analyzed for but not detected. The number is the estimated minimum detection limit.
C	The value is one of, or the sum of both, Benzo(b) Fluoranthene and Benzo(k)Fluoranthene.
dr, wt	Result is calculated on a dry weight or wet weight basis.

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EPA Region X Lab Management System
Sample/Project Analysis Results

Page 1

Project: TEC-222D

MARINE POWER

Officer: MJM

Account: AFEB3A

Sample No: 87 150000 Begin Sample Date: 87/04/09 12:57 Source:

Laboratory: RX

Description: LAKE UNION/MIDCHANNEL/OFF MPE DD2

End Sample Date: 87/04/09 13:02

Comp: B

Freq: G6

Metals - Specified		Water-Total
Parameter		Result Units
Arsenic	As-Total	1U ug/l
Cadmium	Cd-Total	0.2U ug/l
HexChrom	Cr6Total	1U ug/l
Chromium	Cr-Total	1U ug/l
Copper	Cu-Total	1U ug/l
Iron	Fe-Total	35 ug/l
Lead	Pb-Total	18 ug/l
Zinc	Zn-Total	1U ug/l
Tin	Sn-Total	19 ug/l
Mercury	Hg-Total	0.05U ug/l

Metals - Specified		Water-Filtere
Parameter		Result Units
Arsenic	As-Diss	1U ug/l
Cadmium	Cd-Diss	0.2U ug/l
Chromium	Cr-Diss	1U ug/l
Copper	Cu-Diss	1U ug/l
Iron	Fe-Diss	21 ug/l
Lead	Pb-Diss	7 ug/l
Zinc	Zn-Diss	1U ug/l
Tin	Sn-Diss	1U ug/l
HexChrom	Cr6Diss	1U ug/l
Mercury	Hg-Diss	0.05U ug/l

(Sample Complete)

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EPA Region X Lab Management System
Sample/Project Analysis Results

Page 2

Project: TEC-222D

MARINE POWER

Officer: MJM

Account: AFEB3A

Sample No: 87 150001 Begin Sample Date: 87/04/09 13:17 Source:

Laboratory: RX

Description: LAKE UNION SED W SIDE MPE DD3

Particle Size Analys		Sediment
Parameter		Result Units
<8.0 >=4.0mm		REQ
<4.0 >=2.0mm		REQ
<2.0 >=1.0mm		REQ
<1.0 >=0.5mm		REQ
<0.5 >=0.25mm		REQ
<0.25 >=0.125mm		REQ
<0.125 >=0.062mm		REQ
Silt and Clay <0.062mm		REQ
<0.062 >=0.031mm		REQ
<0.031 >=0.016mm		REQ
<0.016 >=0.008mm		REQ
<0.008 >=0.004mm		REQ
<0.004 >=0.002mm		REQ
<0.002 >=0.001mm		REQ
Residual <0.002mm		REQ
Gravel >=2.0mm		REQ
Sand <2.0 >=0.062mm		REQ
Silt <0.062 >=0.004mm		REQ
Clay <0.004mm		REQ

Metals - Specified		Sediment	
Parameter		Result	Units
Arsenic	As-Sedmt	2760	mg/kg-dr
Cadmium	Cd-Sedmt	7.9	mg/kg-dr
Chromium	Cr-Sedmt	120	mg/kg-dr
Copper	Cu-Sedmt	3360	mg/kg-dr
Lead	Pb-Sedmt	2790	mg/kg-dr
Zinc	Zn-Sedmt	8940	mg/kg-dr
Tin	Sn-Sedmt	63.5	mg/kg-dr
Iron	Fe-Sedmt	143350	mg/kg-dr
Mercury	Hg-Sedmt	0.21	mg/kg-wt

(Sample Complete)

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EPA Region X Lab Management System
Sample/Project Analysis Results

Page 3

Project: TEC-222D

MARINE POWER

Officer: MJM

Account: AFEB3A

Sample No: 87 150001A Begin Sample Date: 87/04/10 : Source:

Laboratory: RX

Description: ELUTRIATE TEST OF 87150000 & 87150001

Metals - Specified		Water-Filtere	
Parameter		Result	Units
Arsenic	As-Diss	167	ug/l.
Cadmium	Cd-Diss	0.2U	ug/l
Chromium	Cr-Diss	1U	ug/l
Copper	Cu-Diss	2	ug/l
Iron	Fe-Diss	158	ug/l
Lead	Pb-Diss	12.	ug/l
Zinc	Zn-Diss	14	ug/l
Tin	Sn-Diss	1U	ug/l
HexChrom	Cr6Diss	1U	ug/l
Mercury	Hg-Diss	0.05U	ug/l

(Sample Complete)

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EPA Region X Lab Management System
Sample/Project Analysis Results

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Project: TEC-222D

MARINE POWER

Officer: MJM

Account: AFEB3A

Sample No: 87 150002 Begin Sample Date: 87/04/09 16:15

Source:

Laboratory: RX

Description: BLANK

Metals - Specified		Water-Total	
Parameter		Result	Units
Arsenic	As-Total	1U	ug/l
Cadmium	Cd-Total	0.2U	ug/l
HexChrom	Cr6Total	1U	ug/l
Chromium	Cr-Total	1U	ug/l
Copper	Cu-Total	1U	ug/l
Iron	Fe-Total	5U	ug/l
Lead	Pb-Total	5U	ug/l
Zinc	Zn-Total	1U	ug/l
Tin	Sn-Total	1U	ug/l
Mercury	Hg-Total	0.05	ug/l

Metals - Specified		Water-Filtere	
Parameter		Result	Units
Arsenic	As-Diss	1U	ug/l
Cadmium	Cd-Diss	0.2U	ug/l
Chromium	Cr-Diss	1U	ug/l
Copper	Cu-Diss	1U	ug/l
Iron	Fe-Diss	5U	ug/l
Lead	Pb-Diss	5U	ug/l
Zinc	Zn-Diss	1U	ug/l
Tin	Sn-Diss	1U	ug/l
HexChrom	Cr6Diss	1U	ug/l
Mercury	Hg-Diss	NAR	ug/l

(Sample Complete)